QUARTERLY SUMMARY

OF THE

IMPROVEMENTS AND DISCOVERIES

IN THE

MEDICAL SCIENCES.

ANATOMY AND PHYSIOLOGY.

1. *The Colourless Corpuscles of the Blood.*—Dr. Lionel Beale presented to the Microscopical Society of London, Jan. 13th, 1864, a paper on these corpuscles, which he prefaced with a few remarks, stating that as the paper was too long to be read *in extenso* he would endeavour to give the pith of it. He commenced by stating that the germinal or living matter, of which all nuclei, and in some cases what had been termed cell-contents consist, always exhibited a tendency to assume the spherical form: that whatever shape this germinal or living matter was made to take by pressure of external matter, if placed in a fluid about its own density, it always becomes spherical. The white corpuscle of the blood, like other forms of living matter, if carefully watched, may be frequently detected forming projections or outgrowths upon its surface, almost like the amœba. The moving power, Dr. Beale thinks, resides in the most minute particles of this living or germinal matter, and that although contained granules may be observed in active motion, the movement communicated to them by the minute spherical particles of living matter does not depend upon the mere molecular movements of the granules themselves. Dr. Beale believed the little highly refractive particles which give to the white blood corpuscle its granular appearance, to be dead formed material, resembling fibrin—for whereas the living germinal matter could be coloured by a solution of carmine, the granules could not, and this he looks upon as a test for the germinal matter. In a clot of blood, stellate cracks are often seen between the surrounding coloured corpuscles converging towards a colourless corpuscle. He believes their appearance to result from the white corpuscle absorbing nutrient material from the *liquor sanguinis*, the cracks or fissures being the channels through which the streams of nutrient matter flowed. In inflammation the increase of white corpuscles in the capillaries is enormous, and Dr. Beale believes they have the power by budding of increasing in number, even after the death of the animal. In favour of this view he instanced the case of a clot of blood, which, if examined immediately after death, would be found to contain a certain number of colourless corpuscles, but when examined a few hours later a greater number might be observed. He also stated that the periosteum of the fang of an inflamed tooth was a very favourable position for observing the formation of white corpuscles in young vessels. Dr. Beale believes that the white corpuscles multiply in the circulation, especially in such positions where it is slow and sluggish —for instance, in the spleen. He thinks that they are formed from the germinal matter of the walls of the vessel, as well as by subdivision, and the formation of buds on the part of the white corpuscles. D. Beale then entered upon the "Exudation" and "Coll" theories, as applied to morbid products in inflammation. He thought that minute living particles passed through the stretched walls of

distended capillary vessels, and that these living particles grew and increased in the exudation after its escape. Hence he could accept neither theory, since the "exudation" contained solid living particles, but these living particles could not be considered "cells," for they had not the structure, nor were they produced in the manner which those who accept the cell theory believe cells to result. He then stated, that besides the white and red corpuscles of the blood, the *liquor sanguinis* contains an enormous number of the extremely minute particles just referred to, and he hazarded the opinion that it was such living active particles that we were to regard as the active animal "ferments" which give rise by the so-called "catalysis" to contagious and infectious diseases, as smallpox. These germs might pass in a living state from one person to another, and multiply. There could be no more interesting field for investigation than this. He then went on to state that every living particle is derived from some pre-existing living or germinal matter; that the formed material on the other hand was dead matter; and that in it chemical and physical changes occurred, but not the so-called *vital actions;* the latter being confined to the germinal matter alone. The living germinal matter of the white corpuscles in the blood, if allowed to die very slowly, under certain conditions became resolved into the hæmato-crystalline of which the red blood corpuscles were composed. This, as is well known, readily assumes the crystalline form. If the death of the living matter occurred more quickly, the result was fibrin, so that the formation of fibrin was a vital process—in fact, that the germinal matter in dying became fibrin. Dr. Beale then introduced the theories of Professor Lister on the coagulation of the blood; and although disagreeing in his views, yet spoke most highly of his labours, and regretted that English reviewers, who were enabled to give lengthy and elaborate criticisms upon the works of foreign observers, passed over with a few words of approval or dissent the labours of their fellow-countrymen. Dr. Beale thought that there was more real conscientious physiological work done in Great Britain than many supposed.—*Dublin Med. Press*, Feb. 3, 1864, from the *Electrician*.

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2. *Variety of the Muscles of the Axis, Atlas, and Occipital Bone.*—Dr. JOHN STRUTHERS showed to the Medico-Chirurgical Society of Edinburgh a dissection in which the muscles which normally arise from the spine of the axis were shifted down to the spine of the third vertebra. The spine of the axis wanted its usual bifurcation and great size. The rectus capitis posticus major muscle arose entirely at the spine of the third vertebra. The recti minores were normal between the atlas and occiput. The interspinales muscles were absent between the atlas and axis, but present between the axis and third vertebra. The obliquus inferior muscle arose in its great bulk at the spine of the third vertebra, and this at first appeared to be the entire muscle; but a portion, about one-fourth the size of the lower, was then found coming normally from the spine of the axis, lying deeply on the lamina, and joining the large portion above its middle. The obliquus superior was normal. At first the attachment of the rectus major and obliquus inferior at the third vertebra seemed to be directly to a massive spinous process; but, on dissection, it became evident that, while the spine of the third vertebra was larger and more largely bifid than usual, the muscles were fixed to it indirectly, that they were attached to a thin flat oval sesamoid-like bone, resembling a rather small-sized almond. This epispinous bone was attached to the corresponding tubercle of the third spine by a strong ligament, and by ligamentous fibres to its fellow of the other side. The interspinales muscles in the space between the third vertebra and axis were large, and seemed also to be attached below entirely to the epispinous bones; but there was a deeper and smaller pair of interspinales, which were attached directly to the spine of the third vertebra. The muscles which normally pass from below to the spine of the axis, were attached to the third spine through the epispinous bones instead of reaching up to the axis.

This was undoubtedly a very singular variety. Looking to the absence, as usual, of interspinales in the space between the first and second vertebræ, and their presence in the space between the second and third, while the recti majores were at the same time attached below the latter space; and looking also